BRAZZALE, A. R., DAVISON, A. C., and REID, N. **Applied Asymptotics: Case Studies in Small Sample Statistics.** Cambridge University Press, Cambridge, U.K., 2007. viii + 248 pp. US$65.00/£45.00. ISBN 978-0-521-84703-2.

This is an excellent book for applied statisticians. It presents applications of higher order asymptotic theory in likelihood in many different contexts. The book is generally well written and can be used by applied researchers to extend the presented case studies to include their own research interests.

Higher order asymptotic theory makes it possible to obtain very accurate distributional results in statistics. It is an important topic that has remained somewhat in the background in applied statistics and other sciences. The reason is, as the authors mention, that the theory can appear difficult and may not have a large impact in practice. This is unfortunate because many of the standard techniques for hypothesis testing can be greatly improved by using these results. The two coauthors, but especially Reid, are well known for their work in asymptotic theory. By writing this book, I think the authors have succeeded in making higher order theory more accessible and they will succeed in getting more scientists involved in this theory. The book can also be used as material for a course on higher order theory. There are sufficient problems of different levels of difficulty at the end of the book.

The book begins in Chapter 2 with a brief explanation of the results from higher order theory that will be applied to data in different contexts. The concepts involved are well explained in this conceptual introduction. This chapter is easy to read and quite convincing. At the end of this chapter, however, there are several technical definitions that remain rather vague to applied researchers, like that of the canonical parameter that uses ancillary statistics. It is understandable that the authors chose to defer discussion of these technical details until Chapter 8, where more details of asymptotic approximations are explained. But I think the authors could have spent a few more words on the conceptual understanding on some of these definitions.

The next four chapters, 3–7, contain applications of higher order asymptotics to different types of data. The authors have selected the examples well and have presented them very clearly. I enjoyed going through them. Chapter 3 involves small data sets that illustrate the principles well. This chapter is very good to get a first understanding of the possibilities and potential of higher order asymptotics. Chapters 4 and 5 demonstrate many different possible applications of the theory for discrete and continuous data, respectively. Together with more in-depth illustrations in Chapter 6, these chapters make it possible for the reader to find a familiar application and then try to extend it to her own situation. Because the book includes `R` code for several packages, it is easy to verify the results presented in the book. It is also very easy to extend the obtained results to your own research and apply the `R` code to your own data. Chapter 7 emphasizes more methods than the previous chapters. The examples presented in this chapter show in great detail how some problems, like dependent data, can be handled using higher order theory.

Chapters 8 and 9 are much more technical. Chapter 8 is a theoretical discussion of asymptotic approximations in likelihood theory and Chapter 9 is on computer implementation. Even though the material is quite technical I think that many applied researchers will find it accessible. Chapter 8 follows generally the books by Barndorff-Nielsen and Cox (1989, 1994), but is, of course, much less extensive. The authors do provide more details here and there than Barndorff-Nielsen and Cox. However, I think that Chapter 8 could be better. For example, Chapter 9 on higher order theory by Young and Smith (2005) is much more acccessible than Chapter 8 by Brazzale, Davison, and Reid. Young and Smith integrated topics like Edgeworth expansion into the text, whereas Brazzale, Davison, and Reid deferred these kinds of topics to the appendix.

In summary, I highly recommend the book to researchers looking for ways to improve accuracy in statistical testing. The book is well written, the examples are clear, and because all examples can be verified by the reader through the provided packages and code in `R`, the analyses can be explored in great detail. I particularly like the fact that at the end of each chapter there are bibliographic notes, which refer to the literature and describe a bit of the history of the subject. Especially the notes of Chapter 8 are enlightening.

References

Barndorff-Nielsen, O. E. and Cox, D. R. (1989). *Asymptotic Techniques for Use in Statistics*. London: Chapman & Hall.

Barndorff-Nielsen, O. E. and Cox, D. R. (1994). *Inference and Asymptotics*. London: Chapman & Hall.

Young, G. A. and Smith, R. L. (2005). *Essentials of Statistical Inference*. New York: Cambridge University Press.

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BRIEF REPORTS BY THE EDITOR

SHOUKRI, M. M. and CHAUDHARY, M. A. **Analysis of Correlated Data with SAS and R, 3rd edition.** Chapman and Hall/CRC, Boca Raton, FL, 2007. xv + 295 pp. US$89.95/£47.99. ISBN 9781584886198.

Previous editions of this book were published under the name, *Statistical Methods for Health Sciences* (Shoukri and Edge, 1996; Shoukri and Pause, 1999). The new title reflects the real concentration of the book. It tersely describes standard methods of analysis for relationships between variables—linear, logistic, and Poisson regression, and contingency table and survival analysis—then focuses on special cases of clustered and longitudinal data. Basic forms of each model and analysis are presented, using a combination of prose and formulas. Examples are studied, and basic, no-frills `SAS` and `R` code are given for most examples. The level of the book is appropriate for quantitative undergraduates or practitioners: there are no derivations, but also no shortage of formulas.